

days, for U. S. Weather Bureau at New York 15.48 days, and for Meteorological Observatory at New York 14.03 days. It will be seen by these figures that there is a greater number of days of rainfall at the two stations in the British Isles than there has been at New York, and a much wider range of the number of days, whereas the records in the city of New York show that there is a less number of days, and the number of days is very limited in its range. These figures should efface from the card of probabilities this superstition of St. Swithin's Day so far as the climate of the United States is concerned. Altho the records of the climate of Great Britain show a larger number of days of rainfall there than in the city of New York, yet the old legend should receive the same favor there as in this country. It seems to be almost useless to say anything further regarding the absurdity of this old superstition, with such an array of telltale figures all set against the legend.

It has been suggested that the greater precipitation at our southern coast cities would show a much higher average than at New York, if it did not show that the old legend would at times hold good; but an examination of the records of two of the southern weather stations shows that the higher average during the period is of no moment, and that there has never been a year when there were 40 successive days of rain after July 15.

#### THE "SANTA ANA" OF CALIFORNIA.

The dust storms of the San Gabriel Valley are described by Prof. George E. Hale in the following quotation from his report in the Annual Volume for 1906, of the Carnegie Institution of Washington:

I have previously alluded to the dust storms which sometimes enter the San Gabriel Valley thru the Cajon Pass from the Mojave Desert, and those much rarer storms in which the dust is carried by the wind completely over the Sierra Madre Mountains. In the more common form of dust storm (the so-called "Santa Ana") the dust enters the valley in a fairly well-defined mass and proceeds westward along the canyon of the Santa Ana River. In approaching the coast it spreads over a large area and diffuses itself with tolerable uniformity thru the lower atmosphere. I have seen from Mount Wilson a dust storm in the region of Riverside which in twenty-four hours had spread itself over Los Angeles and Pasadena. When it reached this part of the valley there was almost no wind, and the dust seemed to diffuse itself thru the air. Such storms sometimes completely hide the Sierra Madre Mountains from observers in Pasadena. Fortunately they are almost always confined to the lower atmosphere, and do not appreciably affect the transparency of the sky above Mount Wilson, where daily observations show that the transparency of the day and night sky are very satisfactory.

#### STANDARD TIME.

According to the Monthly Notices, Royal Astronomical Society, February, 1907, the standard time used in India since July 1, 1905, has been five hours and thirty minutes fast on Greenwich time; that of Burma is six and a half hours fast, but the time ball of the Colaba Observatory, Bombay, which is about 73° east of Greenwich, drops daily at exactly 3 a. m., Greenwich time, or about 8 a. m., local time. The Council at Port Louis, Mauritius, has decreed that from and after January 1, 1907, the standard time for that colony and its dependencies shall be that of the meridian 60° east of Greenwich. (The longitude of Mauritius is about 58°.) The standard for the Seychelles is also four hours fast on Greenwich time; but the standard for the Chagos Archipelago is five hours east of Greenwich. These regular hour standards are convenient for local use in many respects; but when it comes to interchange of meteorological data by cable and wireless, as well as by the ordinary telegraph and telephone, it would seem that the time must soon come when the world will find it best to adopt the Greenwich time uniformly. We do not, ourselves, appreciate the necessity for having, in India and the ocean south of it, four different standards (four, five, five and a half, and six and a half hours from Greenwich). The inconvenience of an irregular and arbitrary system of standards is appreciable,

tho of course not to be compared with the confusion that existed before any standard was adopted. We fear that the subdivision into half and quarter hours will do more harm than good.—EDITOR.

#### PENALTY FOR COUNTERFEITING FORECASTS.

The Agricultural appropriation bill for the fiscal year ending June 30, 1906 [Statutes at Large, vol 33, part 1], contained the following legislative item:

Any person who shall knowingly issue or publish any counterfeit weather forecasts or warnings of weather conditions, falsely representing such forecasts or warnings to have been issued or published by the Weather Bureau, or other branch of the Government service, or shall molest or interfere with any weather or storm flag or weather map or bulletin displayed or issued by the United States Weather Bureau, shall be deemed guilty of a misdemeanor, and, on conviction thereof, for each offense, be fined in a sum not exceeding five hundred dollars, or be imprisoned not to exceed ninety days, or be both fined and imprisoned, in the discretion of the court.—(See Act of Congress approved March 3, 1905.)

#### EQUINOCTIAL STORMS.

By Prof. E. B. GARRIOTT.

The term "equinoctial storms" has for centuries been applied to storms that happen near the spring and autumn equinoctial periods. Like many other popular impressions regarding imperfectly understood natural phenomena the general idea had its origin in observed facts. The difficulty in this case has been that the facts concerning the character and seasonal and geographical limits of storms that are associated with the equinoxes have given way to fancy. The rainy season of the Tropics, and the storms of the middle latitudes that occur in the spring and fall, have been confused with the severer storms known as hurricanes, cyclones, and typhoons that are experienced in the tropical and subtropical regions and even in the middle latitudes in certain seasons of the year.

The rainy season of the Tropics, which is entirely distinct from the season of equinoctial storms, attends the annual march of the sun over the equatorial regions. When the sun in its northward journey crosses the imaginary line of the equator the rainy season sets in over the northern equatorial region, and the rain belt keeps pace with the northward movement of the sun until the time of the summer solstice, about June 21, when the sun reaches the point farthest north in its course. About that time the rain belt reaches into the northern subtropical regions, like Florida, and the rainy season begins in those regions. In tropical countries, like the Isthmus of Panama, there is usually a short, dry season in the interval following the northward movement of the rain belt and its return southward with the sun. The characteristics of the rains of the Tropics are controlled largely by geographical and topographical features. They come in the form of local thunderstorms that are often attended by torrential rains and sometimes by severe wind squalls. Their occurrence is usually confined to the afternoon and the early portion of the night.

The season of severe tropical, or equinoctial, storms in the Northern Hemisphere, and more especially in the tropical and subtropical North Atlantic Ocean, does not begin until the sun has about half completed its return course to the equator. They occur near the time of the autumnal equinox, and their season extends from August to October, inclusive. In the North Atlantic Ocean these storms are called hurricanes, in the Indian Ocean, cyclones, and in southeastern Asiatic waters, typhoons. In the Pacific area the typhoon season begins earlier and continues later than the hurricane season of the North Atlantic Ocean.

At first sight it appears that astronomical events that fore-run by several weeks meteorological phenomena can not be associated with those phenomena in the relation of cause and effect. Meteorological changes and conditions, due to astronomical causes, do not necessarily coincide in time of occur-